

Notes, Assignments, Study Guides

Notes

- Introduction to Theory of Computation¹
- Introduction to OCAML²
- OCAML basics³
- OCAML example: sets as lists (optional)⁴
- Alphabets, strings, substrings, empty string, lexicographic ordering⁵
- Alphabet and friends in OCAML⁶
- Languages, examples, constructions⁷
- Deterministic Finite Automata⁸
- DFAs in OCAML⁹
- Regular Languages¹⁰
- Implementation of union in OCAML¹¹
- Non-deterministic automata, examples¹²
- Regular Expressions¹³
- Nonregular languages and the Pumping Lemma¹⁴
- Lexers¹⁵
- Context Free Grammars¹⁶
- Pushdown Automata definition¹⁷

¹[notes/theory_intro.html](#)

²[notes/ocaml_intro.html](#)

³[notes/ocaml_basics.html](#)

⁴[notes/ocaml_sets.html](#)

⁵[notes/alphabet.html](#)

⁶[notes/ocaml_alphabet.html](#)

⁷[notes/languages.html](#)

⁸[notes/fin_aut_dfa.html](#)

⁹[notes/ocaml_dfa.html](#)

¹⁰[notes/fin_aut_dfa.html](#)

¹¹[notes/ocaml_dfa.html](#)

¹²[notes/fin_aut_nfas.html](#)

¹³[notes/regexp.html](#)

¹⁴[notes/nonregular.html](#)

¹⁵[notes/lexers.html](#)

¹⁶[notes/cfg.html](#)

¹⁷[notes/pushdown_automata.html](#)

- CFG \leftrightarrow PDA¹⁸
- Pumping lemma for CFGs¹⁹
- Basics of Parsing²⁰
- Turing Machines²¹
- Decidable Problems²²
- The Halting Problem²³
- Reducibility²⁴
- Mapping Reducibility²⁵
- Time Complexity²⁶
- The P and NP classes. P²⁷
- NP-complete problems²⁸

Assignments

- Assignment 1²⁹
- Assignment 2³⁰
- Assignment 3³¹
- Assignment 4³²
- Assignment 5³³
- Assignment 6³⁴
- Assignment 7³⁵

¹⁸[notes/cfg_pda.html](#)

¹⁹[notes/pumping_cfg.html](#)

²⁰[notes/parsing.html](#)

²¹[notes/turing.html](#)

²²[notes/decidable.html](#)

²³[notes/halting.html](#)

²⁴[notes/reducibility.html](#)

²⁵[notes/mapping_reducibility.html](#)

²⁶[notes/time_complexity.html](#)

²⁷[notes/p_vs_np.html](#)

²⁸[notes/np_complete.html](#)

²⁹[assignments/1.html](#)

³⁰[assignments/2.html](#)

³¹[assignments/3.html](#)

³²[assignments/4.html](#)

³³[assignments/5.html](#)

³⁴[assignments/6.html](#)

³⁵[assignments/7.html](#)

- Assignment 8³⁶
- Assignment 9³⁷
- Assignment 10³⁸

Study Guides

- Midterm 1 study guide³⁹
- Midterm 2 study guide⁴⁰
- Final study guide⁴¹

³⁶[assignments/8.html](#)

³⁷[assignments/9.html](#)

³⁸[assignments/10.html](#)

³⁹[notes/midterm1_study_guide.html](#)

⁴⁰[notes/midterm2_study_guide.html](#)

⁴¹[notes/midterm3_study_guide.html](#)